C L A I M S

1. A method for downhole flow measurement in a well, the method comprising installing a fibre optical distributed temperature sensor (DTS) system along at least part of the length of an inflow region of the well and using the sensor to measure one or more fluctuations of the temperature of fluids flowing from the formation into the well and the velocity at which at least one of said natural fluctuations migrates in downstream direction through the well.

2. The method of claim 1, wherein the DTS system is configured to track the downstream migration through the well of low frequency temperature fluctuations of less than 1 Degree Celsius.

3. The method of claim 2, wherein the DTS system is configured to track the downstream migration through the well of natural low frequency temperature variations between 0.1 and 0.5 Degrees Celsius.

4. The method of claim 1, wherein the DTS system extends along at least a substantial part of the length of an inflow region of the well and the method is used to assess the fluid inflow rate at different locations along the length of the inflow region on the basis of measured variations of the velocity of the fluids in a longitudinal direction along at least part of the length of said inflow region.

5. The method of any preceding claim, wherein the well is a hydrocarbon fluid production well.

6. The method of any preceeding claim, wherein the fluids flowing into the well comprise gaseous components

and or components which at least partly evaporate in the
inflow region and the fluid production rate of the well
is cyclically varied over time.

7.   The method of claim 6, wherein the fluid production
rate of the well is cyclically varied by cyclic variation
of the opening of a production choke or downhole valve or
by initiating a slug flow regime in the well or in the
production flowline and/or processing equipment
downstream of the wellhead.